

Prep Instructions

This section describes how to prepare the crime scene and each of the six evidence stations: *Fibre Analysis*, *Fingerprint Analysis*, *Footprint Analysis*, *Dental Analysis*, *Cookie Crumb Analysis* and *Ink Chromatography Analysis*.

Station I - Crime Scene

The following items will be required for the prep of this station:

- yellow party streamer or danger tape
- 2 cue cards (8 in. x 5 in.)
- 4 distinctively different kinds of cookies (for example, Oreo, pink wafer, sugar cookie and dried fruit cookie)
- sheet of paper towel
- water soluble paint
- Suspect B's shoes
- shallow tray, plate or top of a large container
- liquid soap
- water
- marker

Step 1

Place a table in the corner or in the middle of the room. Use yellow party streamers or danger tape to cordon off that area of the room. Using one of the cue cards, make a sign to designate the table as the crime scene (**Figure 1**).



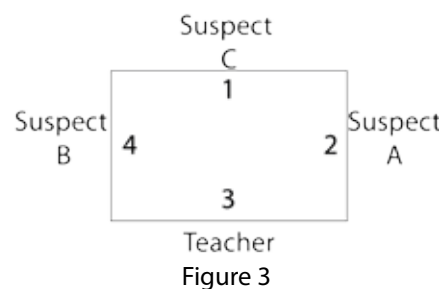
Figure 1



Figure 2

Step 2

Cut the other cue card into four pieces and number the pieces from one to four (**Figure 2**). Position the signs around the table, according to **figure 3**.



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Step 3

Assign a different cookie type to the teacher and to the three suspects. For example, the teacher had the pink wafer, Suspect A had the dried fruit cookie, Suspect B had the sugar cookie and Suspect C had the Oreo. Crush half of each cookie at the corresponding position on the table. Take the other half of the teacher's cookie and crush it at Suspect C's position (**Figure 4**). The difference between the various types of cookies should be obvious from the crumbs.



Figure 4

Step 4

In a shallow tray, mix a bit of water, some paint and a little soap. A trial and error approach is necessary to find the right consistency to achieve a distinguishable footprint.



Figure 5



Figure 6

Step 5

Place the bottom of Suspect B's shoe into the paint mixture (**Figure 5**). Make sure that the entire bottom of the shoe is covered with paint. Lay a sheet of paper towel on the table, then carefully press the bottom of the shoe against the paper (**Figure 6**). After the paint has dried, place the paper towel on the floor of the crime scene. Save the paint mixture for later in the set-up.

Station II - Fibre Analysis

The following items will be required for the prep of this station:

- 4 cue cards (8 in. x 5 in.)
- 4 different fabric swatches (2 in. x 2 in.), preferably all different textures, but all the same colour
- 4 magnifying glasses
- marker
- stapler

Step 1

Fold two of the cue cards in half and cut along the midline. Label each cue card as Teacher, Suspect A, Suspect B or Suspect C.

Step 2

Staple one fabric swatch to each of the cue cards (**Figure 7**).



Figure 7

Step 3

Remove a thread from Suspect C's fabric swatch and tape it to the third cue card, labelled "unknown" (**Figure 8**).



Figure 8

Step 4

Place the fabric swatches and the magnifying glasses onto a separate table. Make a sign to designate the table as the fibre analysis station (**Figure 9**).



Figure 9

Station III - Fingerprint Analysis

The following items will be required for the prep of this station:

- ink pad
- 4 styrofoam cups
- 3 cue cards (8 in. x 5 in.)
- marker
- paper
- hand wipes

Step 1

Fold the cue cards in half and cut along the midline. Label the cue cards as Teacher, Suspect A, Suspect B or Suspect C.

Step 2

Label the styrofoam cups with the numbers from one to four. Match the cup label with the appropriate cue card: cup one = Suspect C, cup two = Suspect A, cup three = teacher and cup four = Suspect B.

Step 3

Recruit four individuals (friends or staff) with distinctly different thumbprint designs (whorl, loop, reverse loop and arch, as seen in **figure 10**). The idea is to have a distinct and different fingerprint left behind on each of the styrofoam cups. Have each person press their right thumb against the ink pad, remove excess ink by pressing their thumb lightly against some paper and then gently press their thumb against one of the styrofoam cups. Have the four individuals also make a thumbprint on the appropriate cue card. Use hand wipes afterwards to clean thumbs.



Figure 10

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Figure 11



Figure 12

Step 4

If the prints are not well-defined, they must be redone. The fingerprint in **figure 11** is too dark, which makes it hard to identify the print pattern, whereas the print in **figure 12** is more distinct and can be used to identify a suspect.

Step 5

Allow the ink to dry and then place the cue cards at the Fingerprint Analysis Station, along with the ink pad and the hand wipes, so that the students can make their own fingerprints. Place the cups at their corresponding places at the crime scene.

Step 6

Make a sign to designate this table as the fingerprint analysis station (**Figure 13**).



Figure 13

Station IV - Footprint Analysis

The following items will be required for the prep of this station:

- scissors
- paint
- water
- soap mixture
- paper
- shoes of suspects A, B, C and teacher
- paper towel
- 1 cue card (8 in. x 5 in.)

Step 1

Set out the paint mixture. Place a stack of paper next to the container containing the paint mixture so that the students can make prints. Keep a roll of paper towels nearby in case of spills.

Step 2

Set out the four pairs of shoes. Label each with the letter of the suspect to which it belongs (A, B or C) and D for the teacher's shoe.

Step 3

Make a sign designating the area as the footprint analysis station (**Figure 14**).



Figure 14

Station V - Dental Analysis

These instructions detail how to prepare plaster casts for one set of teeth (top only). For the activity, four plaster casts are needed and Steps 1-4 should therefore be repeated four times, using a different person for each cast. Using suspects with distinctly different teeth, such as missing teeth, will help students to identify the guilty suspect more easily.

The following items will be required for the prep of this station:

- 4 styrofoam cups
- ruler
- scissors
- Play-Doh or plasticine
- plastic wrap
- plaster of Paris
- water
- spoon
- glass
- 1 cue card (8 in. x 5 in.)

Step 1

Using a ruler, draw a line 2 cm from the base of one of the styrofoam cups (**Figure 15**) and cut along the line with scissors. Put aside the top of the cup for later use (Step 8).



Figure 15

Step 2

Flip the bottom of the cup upside down and cut off approximately a quarter of the cup's base (**Figure 16**). Keep the larger piece.



Figure 16



Figure 17

Step 3

Place a piece of the Play-Doh into the prepared base of the styrofoam cup and mold it to fit. Cover the entire base with plastic wrap, making sure that there are no bubbles or creases (**Figure 17**). It is important that the plastic wrap is taut over the Play-Doh.

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Step 4

Bite into the Play-Doh-filled styrofoam cup with the upper teeth, using as many teeth as possible. Press the mold firmly against the front of the teeth to ensure a clear imprint in the Play-Doh. It is also helpful to push the Play-Doh against the back of the teeth using the tongue. Once the imprint has been made, carefully remove the mold from the mouth and ensure that the plastic wrap is flush with the imprint of the teeth (**Figure 18**). This may take several tries.



Figure 18



Figure 19

Step 5

To prepare the plaster, add 1 tablespoon of water into a glass and mix in 2 tablespoons of plaster of Paris. The consistency should be similar to that of liquid honey. If the mixture is too watery, add more plaster of Paris. If the mixture is too thick, add more water.

Step 6

Carefully fill the mold with the plaster, ensuring the plaster spreads into the entire mold (**Figure 19**). Avoid pouring too quickly as bubbles may form. Add only enough plaster to fill the impression made by the teeth (**Figure 20**).



Figure 20

Step 7

Wait 25-30 minutes until the plaster has set and then carefully remove the Play-Doh from the styrofoam cup. Peel away the Play-Doh from the plaster imprint of the teeth (**Figure 21**). Label the teeth with the letter corresponding to the suspect (A, B or C) or D for the teacher.



Figure 21

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Step 8

Since Suspect C drank the teacher's juice, have the person whose teeth were used to make the plaster mold for Suspect C bite down into the top of the styrofoam cup set aside in Step 1. Ensure that they bite down hard enough to leave behind a clear dental imprint. Cut out the imprint and label the piece of styrofoam "top teeth" (**Figure 22**).

Step 9

Place the dental molds and the top teeth imprint on a table.

Step 10

Make a sign to designate the table as the dental analysis station (**Figure 23**).

Station VI - Cookie Crumb Analysis

The following items will be required for the prep of this station:

- 4 distinctly different types of cookie
- sandwich bags
- 1 cue card (8 in. x 5 in.)

Step 1

Set the cookies and the sandwich bags on a table.

Step 2

Make a sign to designate this table as the cookie analysis station (**figure 24**).



Figure 22



Figure 23



Figure 24

Station VII - Ink Chromatography Analysis

The following items will be required for the prep of this station:

- coffee filters
- scissors
- 4 different types of black marker pens (for example: permanent marker, dry erase marker, fabric marker and washable marker)
- ruler
- pencil
- 1 cue card (8 in. x 5 in.)



Figure 25

Step 1

Make a sign designating this table as the ink chromatography analysis station (**Figure 25**).

Step 2

Label the four markers A, B, C and D (**Figure 26**).



Figure 26

Step 3

Take the coffee filter (**Figure 27**), cut along the serrated seam and open it up.

Step 4

Cut a rectangle from the spread out coffee filter, measuring approximately 8 cm x 16 cm.



Figure 27

Step 5

Write a one line note in Suspect C's pen at the top of the filter paper so that the message covers the entire length of the coffee filter rectangle. For example, "Thanks for the cookies! Delicious!!!" (**Figure 28**). To minimize steps for the students and reduce time spent at the station, cut the rectangle into 1 cm strips in advance and leave them at the ink chromatography station.



Figure 28

Step 6

Cut out 8 cm x 6 cm rectangles from the coffee filters, making sure there's enough for the whole class plus a few extras in case of mistakes. Each group will be given one rectangle of filter paper on which they will mark four dots, one from each of the suspects' pens .

Step 7

Print pages 9 and 10 of the *Activity Instructions* and place them at the station.